

## Original Paper

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## Cluster approach to organization of special economic zones in Russia and Kazakhstan

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### ABSTRACT

The article aims to study the theoretical and empirical foundations of combining free economic zones with industrial clusters. The theoretical foundation is provided by the concept of a cumulative and circular process and the theory of “new economic geography”. The empirical part deals with the creation of cluster-type economic zones in Russia and Kazakhstan. The symbiosis of special economic zones (SEZs) and clusters is expected to enhance export potential and act as a powerful catalyst for national innovative development. Establishment of clusters within the framework of the existing SEZs can bring to these zones highly efficient projects for manufacturing export-oriented products. Methodologically, the research relies on systemic and structural-functional approaches, the logical method and the method of formalization as well as on the comparative and grouping methods applied to analyze SEZs. The study also provides a general overview of the SEZs and clusters operating in Russia and Kazakhstan and indicates their main types and characteristics. The practical significance of this research is that its findings can be used to devise recommendations for improving economic performance of both countries, attracting new technologies and investments and addressing social and economic problems of the regions.

### KEYWORDS

economic regulation, special economic zones, cluster approach, industrial cluster, Kazakhstan, Russia

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## Кластерный подход к организации особых экономических зон в России и Казахстане

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### АННОТАЦИЯ

Целью статьи является изучение теоретических и эмпирических основ объединения свободных экономических зон с промышленными кластерами. Теоретическая основа обеспечивается концепцией кумулятивного и кругового процесса и теорией «новой экономической географии». Эмпирическая часть посвящена созданию экономических зон кластерного типа в России и Казахстане. Ожидается, что симбиоз особых экономических зон (ОЭЗ) и кластеров усилит экспортный потенциал и станет мощным катализатором национального инновационного развития. Создание кластеров в рамках существующих ОЭЗ может принести в эти зоны высокоэффективные проекты по производству экспортно-ориентированной продукции. Методологически исследование опирается на системный и структурно-функциональный подходы, логический метод и метод формализации, а также на сравнительный и групповой методы, применяемые для анализа ОЭЗ. В исследовании также приводится общий обзор ОЭЗ и кластеров, функционирующих в России и Казахстане, и указываются их основные типы и характеристики. Практическая значимость этого исследования заключается в том, что его результаты могут быть использованы для разработки рекомендаций по улучшению экономических показателей обеих стран, привлечению новых технологий и инвестиций и решению социальных и экономических проблем регионов.

### КЛЮЧЕВЫЕ СЛОВА

экономическое регулирование, особые экономические зоны, кластерный подход, промышленный кластер, Казахстан, Россия

### ДЛЯ ЦИТИРОВАНИЯ

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## Introduction

The Russian Federation and the Republic of Kazakhstan are united by a common history, conditions of economic development, cultural traditions and geographical boundaries. Similarity of initial characteristics of the national socio-economic and political systems determines the commonality of the key tasks both countries have to address. One of the main priorities for both countries is diversification of economy, stimulation of innovations and attraction of investments. In his message to the Federal Assembly in 2018, Russian President Vladimir Putin pointed out that to ensure a further structural change of national economy and to enhance its competitiveness it is necessary to use the available “sources of growth” at a fundamentally different level. These include labor productivity, increased investment and development of non-commodity exports<sup>1</sup>. The message of President Nursultan Nazarbayev to the people of Kazakhstan emphasizes that the fourth industrial revolution requires profound technological, economic and social changes as well as new management tools<sup>2</sup>.

Therefore, in both countries, there is a need for full support of regional development and cluster initiatives in the form of various legislative, administrative, managerial and financial-economic measures. In this respect, the key institutional link between these measures may become zones with special conditions for economic activity or special economic zones (SEZs). Such zones make it possible, on the one hand, to make the economy more open, guarantee economic security and stimulate economic growth on the regional level. On the other hand, it gives new impulses to territorial economic systems, activates development potential of territorial clusters and enables the government to launch new large-scale projects using positive effects of scale.

Taking into account the above-mentioned considerations, in this article we are going to compare the experience of creating and SEZs in Russia and Kazakhstan, including the peculiar characteristics of such zones and mechanisms of their operation.

We compared zones with special conditions of economic activity by applying the cluster approach and providing recommendations as to how adjust the priorities for SEZs in order to foster knowledge-intensive economy and to stimulate the development of high-tech industries and services.

## Methodology

Most studies of the available international experience of SEZs and the possibilities of their use in Russia and Kazakhstan were conducted after 1990 [1–10]. The cluster approach, which has been actively developing since the 1990s, offers considerable opportunities of modernizing SEZs. The cluster theory was introduced and popularized by Nobel laureate Michael Porter, who identified such key features of clusters as territorial specialization, competition and cooperation [11].

Alfred Marshall laid the foundations of the geographical clustering theory of firms [12]. According to Marshall, the geographical proximity of firms (“industrial district”) creates external effects (“benefits of agglomeration (or localization)”), which stem from the unification of the labor market, flow of knowledge, and specialization. Firms within Marshallian industrial districts gain advantages in the form of access to specialized human resources and skills, lower costs, knowledge transfer and increased productivity. Porter emphasizes the role of these advantages in increasing productivity and competitiveness of firms, regions and countries in their theory of industrial clusters. Porter puts the main emphasis on “competitiveness” (of firms, industries, regions and countries) in global economy. Openness of firms and industries to foreign competition is considered as a driving force for formation and development of the cluster. The concept of SEZs has much in common with Porter’s concept of clusters.

Theoretical foundations of the cluster approach in organization of SEZs are described by D. Peter [13], M. Amiti, B. S. Javorcik [14], J. A. Mathews [15], and P. R. Krugman [16] (see Table 1).

The heterodox approach ignores the role of agglomeration savings, suggesting that free economic zones themselves provide a platform for attracting export-oriented foreign direct investment, creating a favorable investment climate. Therefore, there is no need to combine it with clusters.

SEZs are, in fact, geographically concentrated, state-supported agglomerations of internationally competitive enterprises. They have a number of advantages such as efficient infrastructure, favorable business environment, few regulatory restrictions and a minimum of bureaucracy. The role of SEZs in shaping the savings from agglomeration and its advantages is ignored in the existing literature largely due to the assumption that SEZs

Table 1

**Theoretical foundations of the cluster approach in organization of special economic zones**

Approaches, concepts and theories	Description
Heterodox approach (M. Amiti, B. S. Javorcik)	The heterodox approach ignores the role of agglomeration savings, suggesting that the free economic zones provide a platform for attracting export-oriented foreign direct investment, thus creating favorable investment climate. Therefore, there is no need to combine free economic zones with clusters
Concept of a cumulative and circular process (J. A. Mathews)	Internationally competitive clusters in host countries act as a factor in attracting foreign direct investment, which triggers the process of “circular and cumulative causality” or a chain reaction. Clusters begin to expand, trying to settle near SEZ, the latter serving as growth poles for regional development
Theory of “New Economic Geography” (D. Peter, P. R. Krugman)	Concentration of production in one region can lead to even greater concentration of production in this region due to international trade. Thus, it can be assumed that SEZs, which are agglomerations of trade-oriented, highly competitive firms, have better prospects for attracting investment to the rest of the host country than inward-oriented clusters. Therefore, they can act as a “big push” by the government or growth poles. Trade benefits are higher when agglomerative savings are applied to goods, since concentration of world production in one place provides substantial benefits

Source: [13–16]

are commercial enclaves with small internal connections, where cheap labor is used to implement poor-quality production. But global experience shows that such zones are evolving and their characteristics change over time. They are getting bigger, and now zones are better integrated into economy, produce more technological and capital-intensive products. In this regard, it is necessary to move to a new theoretical paradigm based on clustering and agglomeration savings in order to capture the potential benefits of SEZs. This new approach, drawing from the cluster theory, will expand our understanding of their benefits and their underlying mechanisms [17].

The cluster approach is, first of all, a new management technology which enhances competitiveness of a particular region or industry and the state as a whole. The cluster approach is a natural stage in economic development and its widespread distribution can be considered as a main feature of all highly developed economies.

As international practice shows, free economic zones can be a part of a cluster. In turn, interacting clusters may be a part of special economic zones. A similar merging process can serve as the beginning of formation of a new type of zones – cluster zones. China uses the cluster approach to create zones (open cities, “Chinese titanium valley”) aimed at developing manufacturing industry. The UAE achieved a positive effect by combining territorial clusters into zones and, conversely, dividing SEZs into clusters. They established 15 SEZs on the basis of seaports and airports and thus managed to ensure an increase in export and import of goods and services, an

increase in foreign direct investment, which led to intensification of international economic relations [15; 18–27].

Today, clusters are recognized as one of the most important tools of enhancing innovative industrial development, competitiveness and efficiency of national economy.

The scheme for assessing the potential of clustering in SEZs may be as follows: first, it is necessary to identify the companies and firms that manufacture goods and provide services for export, taking into consideration their location and the share of exported goods in their production. Second, we should identify large firms which produce or are able to organize production of competitive goods. Analysis of the value chain reveals the firms that provide services and/or that are engaged in supplying semi-finished products. Moreover, it is important to look at the horizontal and vertical chains connecting various firms. Third, we need to identify organizations that can provide information, R&D and education services and organizations that can provide financial support to potential cluster members. Finally, we should consider those governmental organizations that can facilitate the development of the cluster in question by attracting companies of all the above-mentioned types to the SEZ.

### **Possibilities of integrating SEZs and clusters in Russia and Kazakhstan**

Today, the governments of Russia and Kazakhstan are searching for new tools of economic development that would allow these countries to ensure a competitive advantage in domestic and



global markets. One of such tools is the integration of SEZs and clusters.

In Russia, creation and development of clusters should follow the guidelines for implementation of the cluster policy in the constituent entities of the Russian Federation, developed by the Ministry of Economic Development of the Russian Federation dated December 26, 2008 No. 20615-ak / d19.

Table 2 shows the mechanism for combining clusters and SEZs in Russia.

One of the most successful SEZs of the industrial production type is “Alabuga” located on the territory of Tatarstan. The main factor of its efficiency is the interest of regional officials.

Special attention should be paid to “Titanium Valley” – an IPT special economic zone in Sverdlovsk region. Its success is determined by the fact that titanium production has no competitors in Russia and this zone offers the most attractive conditions for taxing profits and customs privileges.

SEZ “Kaluga” in Kaluga region is a highly developed zone due to the competent management system and the fact that its residents produce consumer goods, including automobiles.

As for tourist and recreational areas, one of the most effective SEZs is ‘Birch Katun’ located in Altai. Its effectiveness is largely due to the experimental tourism approach.

To creating a SEZ of the cluster type, it is important that the cluster SEZ should be divided into several cluster formations in order to develop the neighboring regions and territories and it

is also necessary to distribute benefits within the SEZ according to differentiated (individual) approach, to stimulate various activities depending on their priority level [28].

In Kazakhstan, the idea of cluster development was identified as the main method of diversifying the economy. For Kazakhstan, the cluster approach is a fairly new tool, which has recently started to play an increasingly important role in the country’s innovative development. Mechanisms for cluster stimulation and control are being developed at the state level. In general, it should be noted that cluster initiative is being implemented in accordance with the President’s Message to the People of Kazakhstan – “Towards Competitive Kazakhstan, Competitive Economy, Competitive Nation” of March 19<sup>th</sup>, 2004<sup>3</sup>. The main objectives of the cluster initiative are to create the necessary conditions to maximize the country’s competitive advantages in order to develop the non-commodity sector of economy by involving private business structures and improving the performance of enterprises.

In March 2005, Kazakhstan launched the project “Competitiveness Assessment of the Existing and Potential Sectors of Kazakhstani Economy and Elaboration of Recommendations for their Development”. This project received the status of a Kazakhstani cluster initiative. This project was implemented by the Center for Marketing and Analytical Research in cooperation with JE Austin, an American consulting company.

Table 2

Clusters and SEZs in Russian regions

Region	SEZ*	Cluster**
Kaluga	IPT “Kaluga”	Pharmaceuticals, biotechnology, biomedicine
Republic of Buryatia Altai region	TRT “Birch Katun”	Biopharmaceutical cluster
Tomsk	TIT “Tomsk”	Complex processing of coal and industrial waste
Territory of Zelenograd, administrative district of Moscow	TIT “Zelenograd”	Micro- and nanoelectronic products; electronic devices and equipment; integrated technical IT systems based on electronic devices and devices
Sverdlovsk	IPT “Titanium Valley”	Manufacturing of titanium products; production of components and equipment for metallurgy; engineering; aircraft industry; medical equipment and supplies; oil and gas equipment
Republic of Tatarstan	IPT “Alabuga”	Automotive industry; automotive parts; instrument-making; petrochemistry; composite and building materials; construction materials; consumer goods
St. Petersburg	TIT “St. Petersburg”	IT technologies and telecommunications; pharmaceuticals and medical technologies; instrument making; energy efficiency

Source: \* Russia. Special economic zones. JSC “Special Economic Zones”. Retrieved from: <http://www.eng.russe.ru/> (Accessed 14 February 2019); \*\* Map of clusters in Russia. Russian Cluster Observatory Institute for Statistical Studies and Economics of Knowledge. Retrieved from: <http://map.cluster.hse.ru/about/> (Accessed 14 February 2019)

Note: “IPT” stands for the industrial production type of SEZs; “TRT”, tourist and recreational type; “TIT”, technical-innovative type.

At the first stage, the selection was based on such indicators as the share in GDP, GDP growth and export in comparison with the growth of similar indicators in the country, employment rate and potential market attractiveness. The selection segments were those sectors in which Kazakhstan had competitive advantages: these sectors belong to attractive markets and their development is expected to lead to diversification in the short or medium term. Thus, 24 sub-sectors were identified.

At the second stage, markets (global, regional, and national) were analyzed and the potential of industries was assessed. Moreover, forecasts concerning the estimated supply and demand for the next 5–10 years were made. In addition, the analysis focused on structures of the already existing clusters and their cost-efficiency. As a result, 11 clusters were selected<sup>1</sup>.

The final selection stage dealt with the assessment of the possibility of clustering and its out-

<sup>1</sup> *Special economic zones in the Republic of Kazakhstan. Official site of the National Agency for Export and Investment “KAZNEX INVEST”*. Retrieved from: <http://www.kaznexusinvest.kz> (Accessed 25 April 2019)

comes, according to such parameters as leadership, structure, and readiness for work.

This multi-stage selection process resulted in the choice of seven “pilot” clusters (Table 3).

Table 3

#### “Pilot” clusters in Kazakhstan

Sector	Cluster	Region
Basic	metallurgical	Karaganda region
	petrochemical	Mangistau region
Market-oriented	textile industry	Pavlodar region
	production of building materials	Atyrau region
	transport logistics	Zhambyl Region
Innovative	tourist	Southern Kazakhstan
	intellectual and innovative	Almaty region, Astana

Within the framework of the “SP FIID” program and the Strategy “Kazakhstan – 2050”, clusters are planned to be created in the already existing SEZs (Table 4).

The following SEZs in Kazakhstan can be used as a basis for creating high-tech manufacturing clusters (Table 5).

Table 4

#### SEZ and clusters in Kazakhstan and their specialization

SEZ	Specialization	Timeframes	Cluster
Saryarka	metallurgy, metalworking	2011–2036	metallurgical
Seaport Aktau	metalworking, instrument engineering	2002–2028	metallurgical
Pavlodar	petrochemistry	2011–2036	petrochemical
National Industrial Petrochemical Technopark	petrochemistry	2007–2032	petrochemical
Chemical Park Taraz	chemistry	2012–2037	chemical
Ontustic	textile	2005–2030	textile industry
Astana-New City	construction, industry	2001–2027	production of building materials
Horgos – Eastern Gates	trade, logistics	2011–2035	transport logistics
Burabai	tourism	2008–2017	tourist
Technology Innovation Park	IT-innovations, instrument engineering	2003–2028	intellectual and innovative

Source: *Special economic zones in the Republic of Kazakhstan. Official site of the National Agency for Export and Investment “KAZNEX INVEST”*. Retrieved from: <http://www.kaznexusinvest.kz> (Accessed 25 April 2019)

Table 5

#### Potential clusters of high-tech industries based on SEZs

Cluster specialization	Territory	Integrator
Information and communication technologies, advanced technologies (“green” technologies, smart industry, smart environment, e-commerce and media)	SEZ “Technology Innovation Park”	JSC TIT Management Company, National Agency for Technological Development
Production of new materials, advanced technologies (energy-saving, 3D printing, biotechnology) and design	AEO “Nazarbayev University”, SEZ “Astana-New City”	Nazarbayev Research and Innovation System (NURIS)
Alternative energy	SEZ “Astana-New City”	JSC “Samruk Energo”
Metallurgy	SEZ “Saryarka”	AO “Tau Ken Samruk”
Mechanical Engineering	SEZ “Saryarka”, SEZ “Seaport Aktau”	JSC “Kazakhstan Engineering”
Chemistry	SEZ “Taraz”, SEZ “Pavlodar”	LLP “United Chemical Company”

Source: Decree of the Government of the Republic of Kazakhstan of October 11, 2013 No. 1092 “On the Approval of the Concept for the Formation of National Clusters of the Republic of Kazakhstan until 2020”

The use of SEZs is expected to provide favorable opportunities for the development of knowledge-based industrial clusters. For cluster development, it is necessary to organize a complete production cycle of high-tech finished products in strategically important sectors of the national economy with high added value. The pre-requisite for creating a high-tech cluster is to combine advanced research and hi-tech manufacturing. Another pre-requisite is the development of detailed “road maps” (or implementation schedules) for launching cluster projects.

## Conclusion

A special economic zone with a cluster form of organization is a group of economic entities united by priority logistical links. Viewed from the governmental perspective, it is a self-contained autonomous unit in which the necessary range of production, infrastructure and social functions are performed.

Application of the cluster approach allows the government to stimulate the activity of business entities, improve the investment climate and business environment in the region, develop economic, social, information and integration systems and thus intensify the development of entrepreneurship, attract investment and enhance economic growth. For example, in Kazakhstan, “pilot” clusters were created in the following industries: metallurgy (Central Kazakhstan); oil and gas engineering (Western Kazakhstan); textile production (South Kazakhstan); food industry (agricultural areas); production of building materials (Almaty region); tourism (Almaty); and transport logistics (transport corridor between China and Europe). At the same time, many Kazakhstani scientists believe that the country has a potential to create clusters in other sectors of economy such as oil and gas industry, biotechnology, pharmaceuticals, chemical industry, mechanical engineering, and IT.

As for Russia, in order to improve competitiveness of different regions and their production, the following options could be considered, involving creation of SEZs and clusters and their subsequent integration:

1. SEZ “Lotos” in Astrakhan region and a new cluster for construction of modern offshore facilities (ships and platforms, underwater infrastructure designs), special equipment for oil and gas fields development on the Arctic shelf, including underwater robotic complexes and special equipment.

2. Cluster of innovative technologies ZATO Zheleznogorsk, Krasnoyarsk and a new SEZ in the field of space and nuclear technologies. This will increase reliability and quality of GLONASS spacecraft, make it possible to develop new types of fuel for the power unit, and create new ways to store irradiated nuclear fuel and tools for its processing.

3. Cluster Technopolis “New Star” and a SEZ in the field of rocket and aircraft engine engineering to consolidate Russia’s leading position in the aircraft market.

In the future, such “symbioses” of the already existing or evolving SEZs and clusters will enhance the growth of the innovation sector of economy and stimulate exports of goods and services produced within this sector. Moreover, such projects will lead to an increase in the number of small and medium enterprises; ensure the growth of direct domestic and foreign investment; increase the level of labor productivity due to specialization and outsourcing of non-core activities; raise the level of employment by attracting and forming new companies in related and supporting industries. The cluster approach activates socio-economic development of the regions where clusters are based and boosts the territory’s competitiveness.

When considering different options for SEZ-cluster integration, we should keep in mind that we cannot afford to make inefficient investment in the current economic situation. Projects aimed at invention and introduction of new types of goods and services should be encouraged to create a temporary “monopoly of production” on the world market.

Today, two groups of industries can become points of growth: those that are able to compete on the domestic market and have certain export opportunities (automotive, engineering and special shipbuilding industries) and those that are able to compete on international markets such as aerospace, nuclear energy and isotope production, instrument engineering, software development.

The proposed SEZ-cluster integration mechanism should become a hothouse for the development of knowledge-based industries. Such mechanism will make it possible to manufacture products that are competitive on world markets, primarily in the sectors strategically important for Russia and Kazakhstan. The governments of Kazakhstan and Russia should consider creating interstate clusters, which can be implemented within the framework of the Customs Union.



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